

## ABSTRACT OF THE DISCLOSURE

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A reconfigurable multi-mode post-column analysis system improves resolution of liquid chromatography detection data by providing a parking or MS/MS detection mode in which flow of column eluent is substantially reduced to provide greater analysis time within a single eluting detection peak. A micro switching valve unit is reconfigurable between normal (MS) mode that passes column eluent directly to an MS unit, and a peak parking (or MS/MS) mode, in which normal mode column flow is interrupted, and the gradient halted, while more slowly flowing the detection peak of interest through the MS unit. A micro syringe pump contributes to the substantially lower MS/MS flow rate. A MS control unit controls micro switching valve valves to reconfigure between MS and MS/MS modes. After a detection peak, MS mode is reestablished, and the system primary pump returns to normal mode flow rate and gradient conditions. Mode changes can be carried out for each chromatogram detection peak.

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